JBL SYNTHESIS®

SYNTHESIS
Model S3-SPP
OWNER'S MANUAL

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.
ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OUUNE AUTRE SORTIE DE COURANT SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONAL.

The lighting flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the unit..

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

TABLE OF CONTENTS

SECTION_____PAGE

1.0 _____IMPORTANT SAFEGUARDS FOR AUDIO PRODUCTS

2.0 _____ SYNTHESIS THREE SIGNAL PROCESSING PACKAGE (S3-SPP)

2.1 Intro 4
2.2 Features 4
2.3 System Installation 5

3.0_____ MAKING CONNECTIONS

4.0 _____CONTROLS

5.0 _____ SPECIFICATIONS

6.0 _____ SYNTHESIS LIMITED WARRANTY

7.0 _____ CALIBRATION TEMPLATE

JBL Synthesis System
Owner's Manual

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1.0
IMPORTANT SAFEGUARDS FOR AUDIO PRODUCTS

PLEASE READ CAREFULLY ALL THE FOLLOWING IMPORTANT SAFEGUARDS THAT ARE APPLICABLE TO YOUR EQUIPMENT

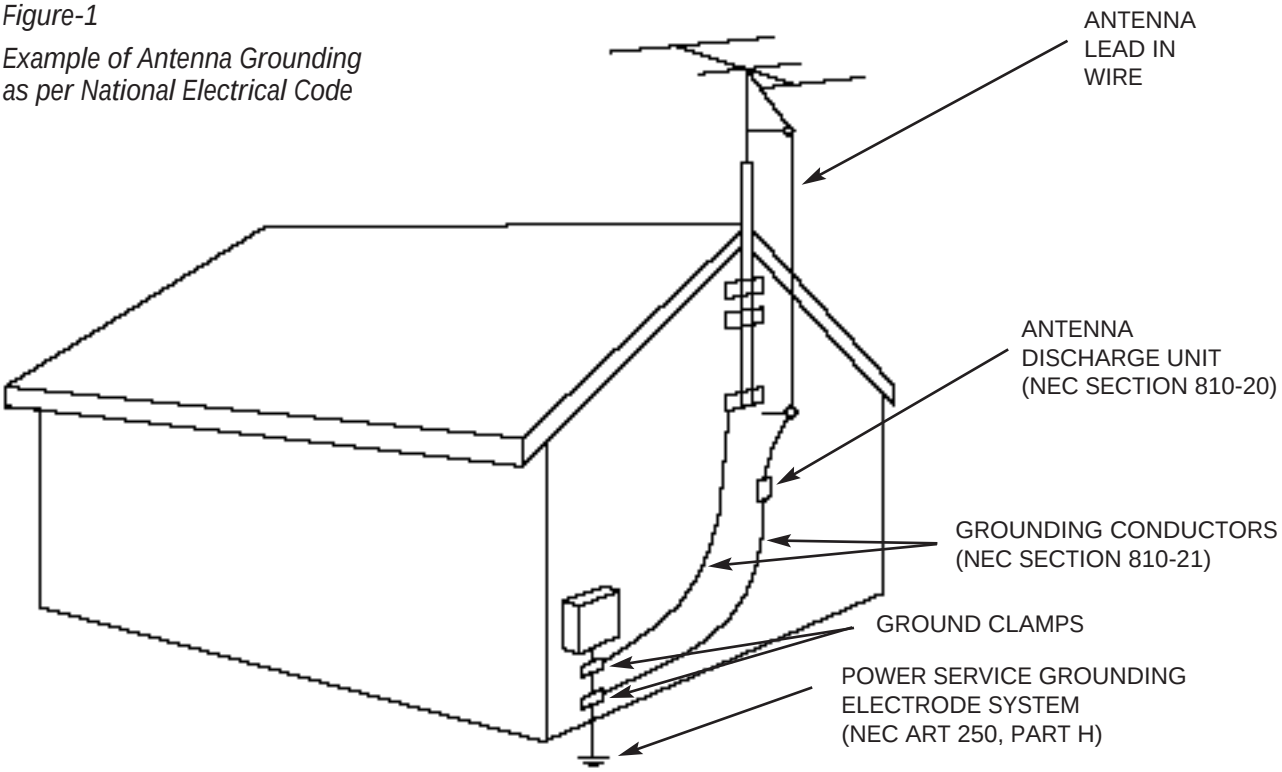
1. *Read instructions – All the safety and operating instructions should be read before the product is operated.*
2. *Retain instructions – The safety and operating instructions should be retained for future reference.*
3. *Heed Warnings – All warnings on the product and in the operating instructions should be adhered to.*
4. *Follow Instructions – All operating and use instructions should be followed.*
5. *Water and Moisture – The product should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.*
6. *Carts and Stands – The product should be used only if a cart or stand is recommended by the manufacturer.*

6a. *A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.*

7. *Wall or Ceiling Mounting – The product should be mounted on a wall or ceiling only when and as recommended by the manufacturer.*
8. *Ventilation – The product should be situated so that its location or position does not interfere with its proper ventilation. For example, the product should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.*
9. *Heat – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat. If placed near an amplifier, check with the manufacturer for applicability.*
10. *Power Sources – The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.*
11. *Grounding or Polarization – Precautions should be taken so that the grounding or polarization means of an product is not defeated.*
12. *Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.*
13. *Cleaning – The product should be cleaned only as recommended by the manufacturer.*
14. *Power Lines – An outdoor antenna should be located away from power lines.*
15. *Nonuse Periods – the power cord of the product should be unplugged from the outlet when left unused for a long period of time.*
16. *Object and Liquid Entry – Care should be taken so that the objects do not fall and liquids are not spilled into the enclosure through the openings.*

Figure-1

Example of Antenna Grounding as per National Electrical Code



17. *Outdoor Antenna Grounding – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode (See Figure 1).*
18. *Damage Requiring Service – The product should be serviced by qualified service personnel when:*
    a. *The power-supply or the plug has been damaged; or*
    b. *Objects have fallen, or liquid has been spilled into the product; or*
    c. *The product has been exposed to rain; or*
    d. *The product does not appear to operate normally or exhibits a marked change in performance;*

    or

    e. *The product has been dropped, or the enclosure damaged.*
19. *Servicing – The user should not attempt to service the product beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.*

NOTE TO CATV SYSTEM INSTALLER:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

2.0
SYNTHESIS THREE SIGNAL PROCESSING PACKAGE (S3-SPP)

2.1 Introduction

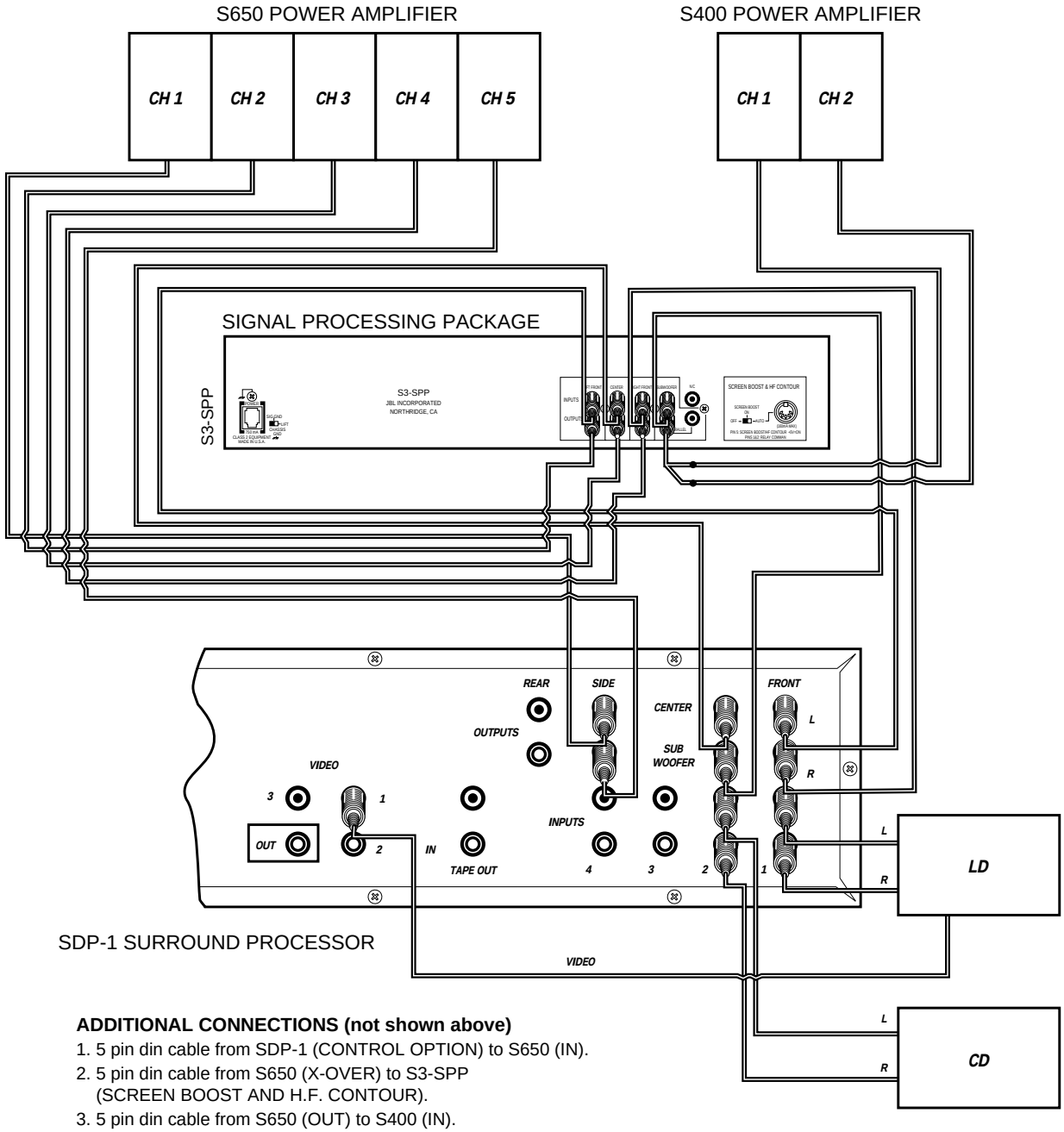
Congratulations on your purchase of JBL's Synthesis Three S3-SPP Signal Processing Package. This product has been designed and built with careful attention to sound quality and aesthetics, and should certainly enhance your listening experience. It is suggested that this component be fully utilized with the Synthesis Three Home Theater system, but it can be used with any Home THX® system or other home theater speaker package. The S3-SPP boasts the following features:

2.2 Features

- *3 Channel Graphic Equalizers for Left, Center, and Right Channels at 1/3 octave spacing, allowing for precise frequency control and contouring*
- *Mono Subwoofer Graphic Equalizer with 1/6 octave spacing for fine tuning of the low frequencies*
- *Electronically switchable screen boost controls for Left, Center, and Right channels to compensate for mounting speakers behind perforated screens*
- *High Frequency Contour controls for the front channels that improves frequency response*
- *Bypass control to remove equalization from signal path to allow for direct unmodified audiophile listening*
- *Ground lift switch that helps to eliminate annoying 50/60 cycle hum and noise caused by ground loops*
- *Removable security panel to prevent accidental adjustment of the controls*
- *Removable ears for 19" standard rack mounting*

2.3 System Installation

The S3-SPP is designed for connection in the audio signal path, between the surround processor and the power amplifiers. Refer to the following diagram for a typical system layout:



ADDITIONAL CONNECTIONS (not shown above)

1. 5 pin din cable from SDP-1 (CONTROL OPTION) to S650 (IN).
2. 5 pin din cable from S650 (X-OVER) to S3-SPP (SCREEN BOOST AND H.F. CONTOUR).
3. 5 pin din cable from S650 (OUT) to S400 (IN).
4. 5 pin din cable from S650 (SPKR 1) to Left Speaker (MODE CONTROL) — Home Media System Only.
5. 5 pin din cable from S650 (SPKR 2) to Right Speaker (MODE CONTROL) — Home Media System Only.

(FIGURE 1)

3.0
MAKING CONNECTIONS

Connecting the Synthesis S3-SPP to your home theater system is extremely straightforward. Using the supplied interconnect kit, connect the audio outputs from your surround processor or receiver to the inputs on the S3-SPP. (refer to figure 1) Using the supplied RCA – RCA cable, connect from the left front output on the processor to the left front input on the S3-SPP. Using the remaining three cables, connect the center, right front, and subwoofer outputs from the surround processor to their corresponding inputs on the S3-SPP.

Note: The rear ambient channels from the surround processor do not to feed through this unit. They are intended to be connected directly to the power amplifier.

OK, YOU'RE ALREADY HALFWAY DONE!

Now that you have connected the outputs of the surround processor to the inputs on the S3-SPP, the remaining step is to connect the outputs from the S3-SPP to the inputs on the power amplifiers. If you are using amplifiers with XLR style input connectors, you will need cables with male RCA plugs on one end, and male XLR connectors on the other. If your amplifier has RCA connections, then you will require male to male RCA cables.

If you have purchased a JBL Synthesis Three Home Media System or Cinema Only System, cables have been provided to simplify installation. If you are using this product with another system, consult with your JBL dealer to purchase the necessary cables.

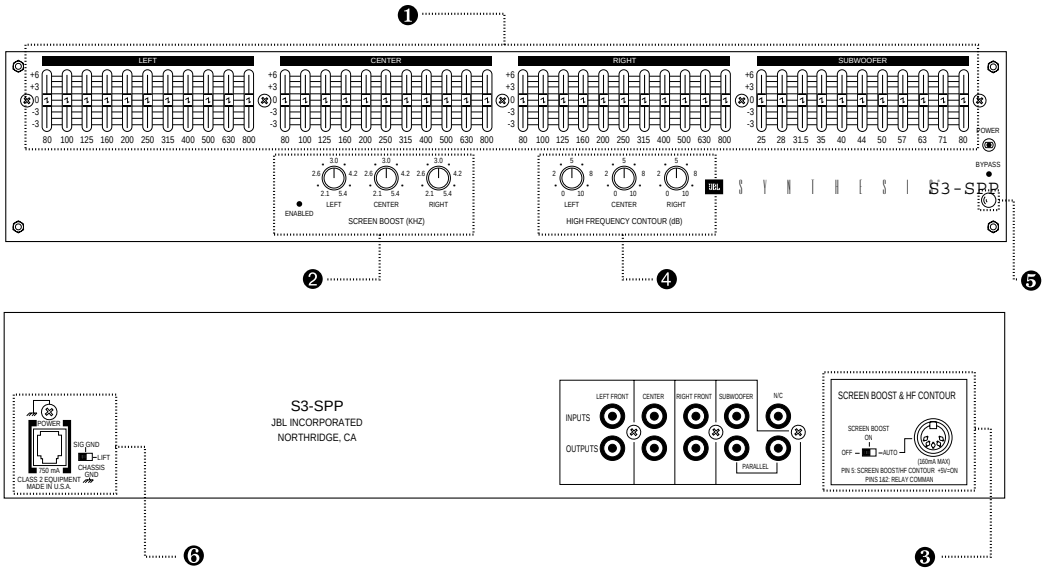
After gathering the appropriate cables, start by connecting the left front output of the S3-SPP to the designated front left input channel on the power amplifiers. Do this for the remaining outputs: center, right front, and subwoofer. Use the supplied "Y adaptor" to connect the subwoofer ouput to both the left and right subwoofer amplifier inputs (see Figure 1).

If the S3-SPP is being used as part of a Synthesis Home Media, or Cinema Only system, connect one end of the 5 pin din cable (included) into the plug labeled "SCREEN BOOST" located on the back panel. Connect the other end to the plug labeled "X-Over" on the power sequencer.

Finally, after making sure that the connections are made properly, plug the power supply cable from the SPP-IPS (included) into the telephone jack style receptacle at the back of the unit. DO NOT CONNECT THIS PLUG TO THE PHONE SYSTEM, OR DAMAGE WILL OCCUR!

If you are mounting any of the front speakers behind a screen, read the section under Controls regarding the screen boost controls before completing installation.

THAT'S IT! YOU'RE ALL DONE!

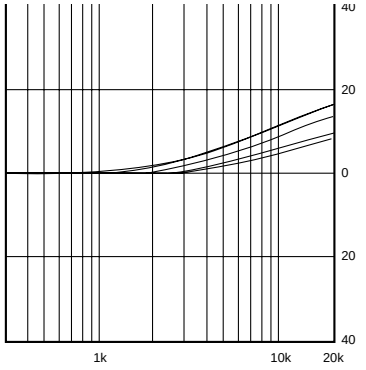


(FIGURE 2)

1 *Sliders – These controls allow for ± 6 dB gain or boost from 80-800 Hz for left, center, and right channels at 1/3 octave wide spacing. The subwoofer controls offer 1/6 wide octave spacing from 25-80 Hz for finer low frequency control. It is recommended that your JBL Synthesis dealer set the sliders for optimum performance. Please put on the included security cover to prevent accidental adjustments.*

2 *Screen Boost – These controls can improve the frequency response of the system when speakers are placed behind a perforated screen. Screens of this type cause approximately a 3dB per octave rolloff in sound level, usually starting at frequencies from 2kHz-6kHz. When the screen boost circuits are activated, the output signal is increased by 6dB per octave starting at the frequency setpoint selected. This compensates for the rolloff caused by the screen and allows for a flat response in the room. When the screen boost circuitry is activated, the screen boost light on the front panel will glow. Utilize these controls only if your front speakers are mounted behind such a screen.*

To accurately set the screen boost settings, it is necessary to know the frequency at which screen induced signal rolloff starts. It is recommended that you talk to the manufacturer of the screen, or ask your JBL Synthesis dealer.



EFFECTS OF THE SCREEN BOOST CONTROLS

The screen boost can be controlled automatically by the Synthesis Three Home Media System or Cinema Only System. It can also be left on permanently, or be disabled. If the S3-SPP is being used with the Home Media System, find the screen boost switch 3 located on the rear panel (Fig. 2) and set it in the auto mode. In this mode, the boost circuits will be activated while the system is in the cinema mode and disabled in the music mode.

If your screen is approved by THX, set the screen boost switch to the off position.

If you are using the S3-SPP with another manufacturer's home theater system, you may leave this switch in the on position. In this case, the boost circuits will always be enabled, regardless of whether the signal is a music source or cinema source.

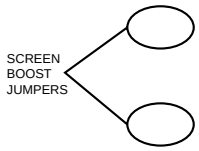
Note: This unit comes configured with the screen boost circuits activated for the center channel only. If your front left and right speakers are also mounted behind a perforated screen, then perform the following:

Remove the top cover of the unit.

Near the front of the unit, directly behind the screen boost controls, locate two jumpers labeled "Screen Boost" (look at figure 3 if you need help in finding these jumpers).

Remove the jumper and reposition it so that the bottom two pins are connected by the jumper.

Put the top cover back on.

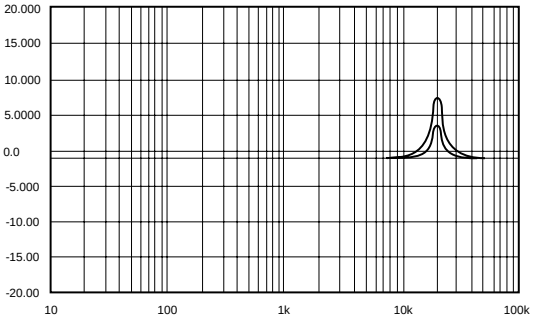


(FIGURE 3)

4 *Hi Frequency Contour – These controls, operational only in the cinema mode, allow for up to 10dB of high frequency gain using an electronically controlled filter centered around 19.5kHz. This equalization has been designed for use with horn systems, such as in Synthesis Three, which are known to have an inherent high frequency rolloff. Use of this filter will boost the high frequencies, allowing for a much flatter rolloff and preserving the high frequency information. It is suggested that if used with the Synthesis system, this control be set to approximately 5dB. If your system is being installed and calibrated by a trained JBL installer, then he or she can fine tune this control. If you are using this unit with another manufacturer's home theatre system, then it is generally advised to leave this control in the 0dB position.*

5 *Bypass – Pressing this button will remove all equalization circuits from the audio path and will pass the input signals to the outputs, unmodified. When the bypass button is pressed, its indicator light will glow.*

6 *Ground Lift Switch – This switch provides the ability to separate chassis ground and signal ground. For normal operation, this switch should remain in the lift position. However, if you are getting hum and buzz problems, move it to the opposite direction.* ***ALWAYS TURN THE AMPLIFIER LEVELS DOWN BEFORE CHANGING POSITIONS ON THE GROUND LIFT SWITCH.***



EFFECTS OF THE HIGH FREQUENCY CONTOUR CONTROL

Equalizer: Channels	Five
Bands (L/C/R)	(11) 1/3-Octave ISO Spacing
Bands (Sub)	(11) 1/6-Oct ISO Spacing
Type	Interpolating Constant-Q
Accuracy	3%
Travel	20mm
Range	±6dB
High Frequency Contour	+10dB @ 19.5kHz
Screen Boost	2.1kHz-5.4kHz; single pole
Inputs: Type	Active Unbalanced
Impedance	10.5k Ohms
Maximum Level	±38dBr
Outputs: Type	Active Unbalanced
Impedance	50 Ohms
Maximum Level	38dBr
Frequency Response	20-20kHz dB +0/–.2dB
Group Delay	Linear (Minimum Phase)
Propagation Delay	less than 50µs
THD + NOISE @ 1kHz	0.0008%
SMPTE IM	0.01%
IHF IM	0.009%
DIM 30	0.009%
Signal-to-Noise	119dB ref: 5vp-p "A" weighting
Dynamic Range	124dB Max out/noise floor (+38dBr/-86dBr)
Channel Separation	50dB
Power Supply: Input	18 VAC w/center tap Vrms
Current	750mA
Safety Agency-Unit	Class 2 Equipment
Design	Safety Extra-Low Voltage
U.L. Listing	UL 813 Exempt
CENELEC	IEC 65 Exempt
Remote Power Supply	Model SPP-IPS
U.L. Listed	E90493
C.S.A. Certified	LR91687
TUV Approved	Meets IEC 950 Standards
SEMKO Approved	9423122
Unit: Size	3.5"H x 19"W x 8.5"D (2U)
Weight	8 lbs
Shipping: Size	7" x 22" x 13"
Weight	13 lbs

Note: 0dBr = 150mVrms = Home THX Equalizer Reference Level
"LUCASFILM THX AUDIO" and "HOME THX CINEMA" are trademarks of Lucasfilm Ltd.

6.0
SYNTHESIS
LIMITED WARRANTY

The Synthesis products listed below are warranted for the period stated from the date of original purchase. Amplifiers, Equalizers, Signal Processing Package and Surround Sound Processor—2 Year Warranty. This warranty applies to non-commercial, residential use only.

WHO IS PROTECTED BY THIS WARRANTY?

Your JBL warranty protects the original owner and all subsequent owners, so long as the original bill of sale is presented when warranty service is required.

WHAT IS COVERED BY THE JBL WARRANTY?

Your JBL warranty covers all defects in material and workmanship with the following specified exceptions. These are (1) damage caused by accident, unreasonable use or neglect (including the lack of reasonable and necessary maintenance); (2) damage caused by improper installation or adjustment; (3) damage occurring during shipment (claims must be presented to the carrier); (4) damage to or deterioration of any accessory or decorative surface; (5) damage resulting from failure to follow instructions contained in your owner's manual; (6) damage resulting from the performance of repairs by someone other than an authorized JBL warranty station; (7) any JBL unit on which the serial number has been effaced, modified, or removed; (8) units which have been altered or modified in design, appearance or construction; (9) products sold on an "as-is" or final sale basis. This warranty covers only the actual defects within the product itself, and does not cover the costs of installation or removal from a fixed installation, normal set-up or adjustments, claims based on any misrepresentation by the seller, or performance variations resulting from installation related circumstances such as program source quality or AC power.

HOW TO OBTAIN WARRANTY SERVICE.

If your JBL product ever needs service, we may direct you to an Authorized JBL Warranty Station, or ask you to send your unit to the factory for repair in which case we'll also supply a Service Return Authorization and complete shipping instructions. If the product was purchased in a country other than the USA, it is necessary to return the product to the distributor or selling location in the same country. Either way, you'll need to present the original bill of sale to establish the date of purchase. Please do not ship your JBL product to the factory without our prior authorization. In the United States, please call 1-800-336-4JBL for the location of the authorized warranty station nearest you.

If service under this warranty is not necessary, but you have questions regarding the installation or operation of this unit, please contact your authorized JBL retailer or call 1-800-336-4JBL for further assistance.

WHO PAYS FOR WHAT?

JBL will be happy to pay all labor and material expenses for all repairs covered by this warranty. If necessary repairs are not covered by this warranty, or if a unit is examined which is not in need of repair, you will be charged for the repairs or the examination.

Although you must pay any shipping charges incurred in getting your JBL product to an Authorized Warranty Station or to the factory, we will pay return shipping charges within the United States if the repairs are covered by the warranty. Please be sure to save the original shipping cartons because a nominal charge will be made for additional cartons.

LIMITATION ON IMPLIED WARRANTIES

IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY, UNLESS OTHERWISE PROVIDED BY STATE LAW.

EXCLUSION OF CERTAIN DAMAGES

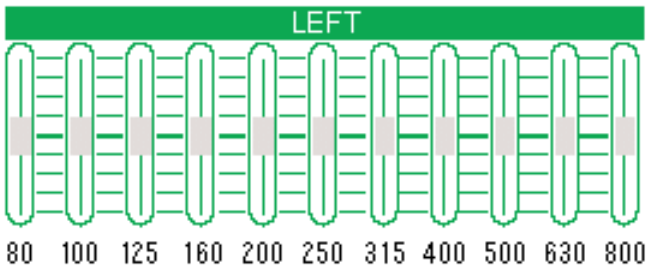
JBL'S LIABILITY IS LIMITED TO THE REPAIR OR REPLACEMENT AT OUR OPTION, OF ANY DEFECTIVE PRODUCT AND SHALL IN NO EVENT INCLUDE INCIDENTAL OR CONSEQUENTIAL COMMERCIAL DAMAGES OF ANY KIND.

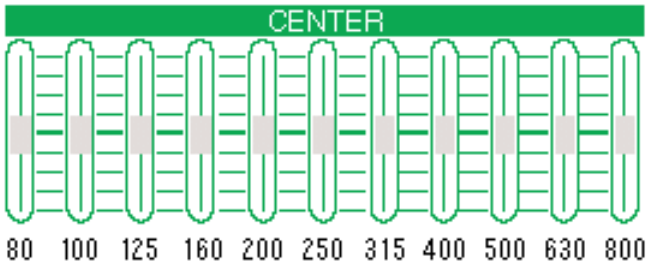
SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

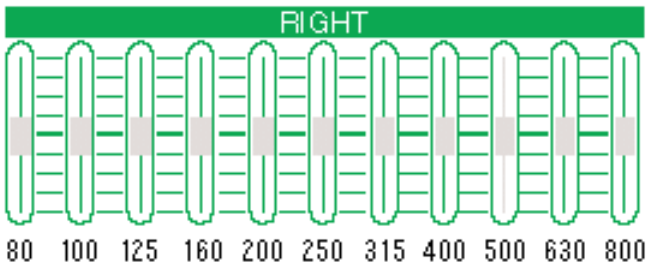
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

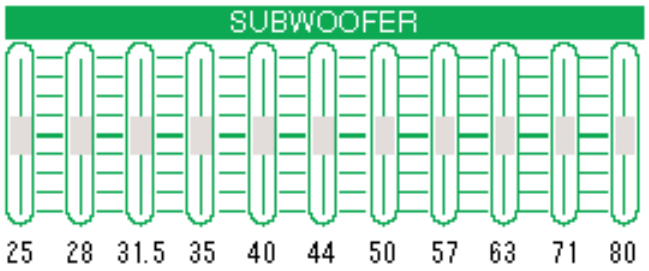
We sincerely thank you for your expression of confidence in JBL products. This equipment has been painstakingly assembled by highly trained craftspeople. It should give you many years of musical enjoyment.

CALIBRATION TEMPLATE 7.0









Date: _____

Owner:_____

Installer:_____